

Application No.: 10/804,183
Amendment under 37 CFR 1.116
Reply to Office Action dated January 4, 2007
March 16, 2007

IN THE CLAIMS

Please substitute the following claims for the pending claims with the same numbers respectively:

Claim 1 (Previously presented): A displacement gauge comprising:

a light emitting portion for emitting light to be projected onto a measurement subject;

an objective lens for receiving light emitted from said light emitting portion and projecting light onto said measurement subject;

an exciting portion for vibrating said objective lens along a first direction at a preset amplitude;

a position detector for detecting the position of said objective lens that is moved in said first direction;

a light diaphragm portion for passing a reflected light from said measurement subject;

a light receiving portion for receiving light passing through said light diaphragm portion;

a displacement operation portion for acquiring a detected position from said position detector at the moment when the light

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received amount of light received by said light receiving portion is maximum, and calculating the displacement on said measurement subject based on said detected position;

an objective lens scan portion connected to said objective lens, said objective lens scan portion has a rotational axis, said objective lens scan portion moving said objective lens in a second direction orthogonal to said first direction around the rotational axis; and

an operation processing portion for calculating the two dimensional displacement regarding said measurement subject, based on the measurement result of displacement at each measuring point, by moving said objective lens along said second direction by said objective lens scan portion to move a measuring point on said measurement subject in a predetermined amount of movement and measuring the displacement at plural measuring points.

Claim 2 (Original): The displacement gauge according to claim 1, wherein said objective lens scan portion moves said objective lens in a circular arc.

Claim 3 (Previously presented): The displacement gauge according to claim 2, wherein said displacement gauge further

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comprises an objective lens movement detection portion for detecting a position of said objective lens that is moved along the second direction by said objective lens scan portion, wherein said objective lens scan portion includes a servo motor for moving said objective lens in a circular arc around the rotational axis, and said objective lens movement detecting portion includes a rotational angle sensor for detecting the rotational angle of said servo motor.

Claim 4 (Previously presented): The displacement gauge according to claim 2, wherein said displacement gauge further comprises an objective lens movement detection portion for detecting a position of said objective lens that is moved along the second direction by said objective lens scan portion, wherein said objective lens scan portion includes a voice coil for rotating said objective lens around the rotational axis, and said objective lens movement detecting portion includes a Hall element for detecting the movement of said voice coil.

Claim 5 (Original): The displacement gauge according to claim 2, wherein said objective lens scan portion has a cantilever connected to said objective lens.

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Claim 6 (Canceled):

Claim 7 (Original): The displacement gauge according to claim 1, wherein said displacement gauge further comprises an image pickup light receiving portion disposed on an optical path of reflected light from said measurement subject, and an image pickup monitor for forming an image of said measurement subject, based on a light reception signal detected by said image pickup light receiving portion, and displaying said image, in which the timing of picking up the image displayed on said image pickup monitor takes places at the moment when the light received amount of said light receiving portion is maximum by exciting said objective lens at a predetermined measuring point by said exciting portion.

Claims 8-19 (Cancelled):

Claim 20 (Previously presented): A method for measuring a displacement on the surface of a measurement subject by receiving a reflected light of light projected onto said measurement subject, the method including:

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a step of vibrating an objective lens, through which said light projected onto said measurement subject is passed, in an optical axis direction of light;

a step of detecting a position of said objective lens that is vibrated, said position being detected at the moment when the light amount of reflected light from said measurement subject is maximum;

a step of calculating a displacement on the surface of said measurement subject based on the detected position;

a step of moving said objective lens by an objective lens scan portion in a direction orthogonal to the optical axis direction and around a rotational axis of the objective lens scan portion to move the measuring point on said measurement subject for which the displacement is calculated;

a step of measuring the displacement amount at said moved measuring point, and measuring the displacement amounts at plural measuring points; and

a step of calculating the two dimensional displacement regarding said measurement subject based on the displacement amount measured at each measuring point; and

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a step of outputting the result of said step of calculating
the two dimensional displacement by an operation processing
portion.